

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application. Claims 19-30 are herein canceled without prejudice.

Listing of Claims:

1. (Currently amended) A method for repairing a defect in an EUV mask, comprising:

 placing, in a chamber, a multilayer work-piece having a pinhole in a capping layer
thereon to a chamber;

 introducing a precursor gas into the chamber in the immediate area of the
multilayer work-piece; and

 directing an electron beam at the pinhole of the multilayer work-piece to fill the
pinhole with a filling material generated from the precursor gas.
2. (Original) The method of claim 1, wherein the electron beam induces a chemical reaction with the precursor gas that causes the precursor gas to dissociate.
3. (Original) The method of claim 1, wherein the capping layer comprises silicon.
4. (Original) The method of claim 3, wherein the precursor gas comprises SiH₄ or Si₂H₆.
5. (Original) The method of claim 1, wherein the capping layer comprises ruthenium.

6. (Original) The method of claim 5, wherein the precursor gas comprises RuF_6 , $\text{Ru}(\text{CO})_5$, or $\text{Ru}_3(\text{CO})_{12}$.
7. (Original) The method of claim 1, wherein the capping layer comprises carbon.
8. (Original) The method of claim 7, wherein the precursor gas comprises CH_4 or any other hydrocarbon.
9. (Original) The method of claim 1, wherein the multilayer work-piece is a mask blank.
10. (Original) The method of claim 1, wherein the multilayer work-piece is a multilayer blank.
11. (Original) A method, comprising:
- adding a capping layer to an extreme ultraviolet (EUV) mask comprising reflective multilayer deposited on a substrate;
 - inspecting the capping layer for a first pinhole; and
 - depositing a first capping filling at the first pinhole.
12. (Original) The method of claim 11, wherein the deposition of the first capping filling is performed by directing an electron beam at the pinhole in the presence of a

precursor gas.

13. (Original) The method of claim 12, wherein the capping layer comprises silicon and the precursor gas comprises SiH_4 .

14. (Original) The method of claim 12, further comprising:

etching an absorber layer and a buffer layer to form a patterned mask;

inspecting the capping layer for a second pinhole; and

depositing a second capping filling at the second pinhole.

15. (Original) The method of claim 14, further comprising:

cleaning the EUV mask surface;

inspecting the capping layer for a third pinhole; and

depositing a third capping filling at the third pinhole.

16. (Original) The method of claim 12, wherein the electron beam is generated by an electron optical system.

17. (Original) The method of claim 15, further comprising:

modulating a growth rate of the first capping filling by adjusting a voltage of the electron beam.

18. (Original) The method of claim 17, further comprising:

increasing the voltage of the electron beam to increase a spatial resolution
of the first capping filling.

19. – 30. (Canceled)